

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 02/14850

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 F04B39/00 C09K3/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F04B C09K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 013 793 A (TORRINGTON CO) 15 August 1979 (1979-08-15) the whole document ---	1,9,13, 15
A	US 3 950 047 A (CAPELLI ALFRED J) 13 April 1976 (1976-04-13) the whole document ---	1,7, 13-16
A	EP 0 276 084 A (LADNEY M JR) 27 July 1988 (1988-07-27) column 4, line 33 - line 44 figure 1 ---	1,5, 13-19
A	US 6 073 538 A (TOMESANI GIORDANO) 13 June 2000 (2000-06-13) the whole document ---	1,5, 13-19
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

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- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search

8 April 2003

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 046 816 A (SPECK KOLBENPUMPENFABRIK) 25 October 2000 (2000-10-25) the whole document ----	1-5, 13-19
A	US 5 112 541 A (FRIEND DAVID R) 12 May 1992 (1992-05-12) cited in the application the whole document -----	1,6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 02/14850

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2013793	A	15-08-1979	BR 7900493 A CA 1108210 A1 FR 2416407 A1 IT 1110754 B	28-08-1979 01-09-1981 31-08-1979 06-01-1986
US 3950047	A	13-04-1976	CA 1036145 A1 DE 2447389 A1 GB 1466989 A JP 945003 C JP 50061550 A JP 53023901 B US 4056478 A	08-08-1978 23-10-1975 16-03-1977 20-03-1979 27-05-1975 18-07-1978 01-11-1977
EP 0276084	A	27-07-1988	US 4750409 A CA 1336590 A1 DE 3864838 D1 EP 0276084 A2 JP 1021271 A JP 1741282 C JP 4032264 B	14-06-1988 08-08-1995 24-10-1991 27-07-1988 24-01-1989 15-03-1993 28-05-1992
US 6073538	A	13-06-2000	IT T0961047 A1 CN 1185529 A	19-06-1998 24-06-1998
EP 1046816	A	25-10-2000	DE 19918394 A1 EP 1046816 A2	26-10-2000 25-10-2000
US 5112541	A	12-05-1992	JP 2001798 A	08-01-1990